FIGURE 1

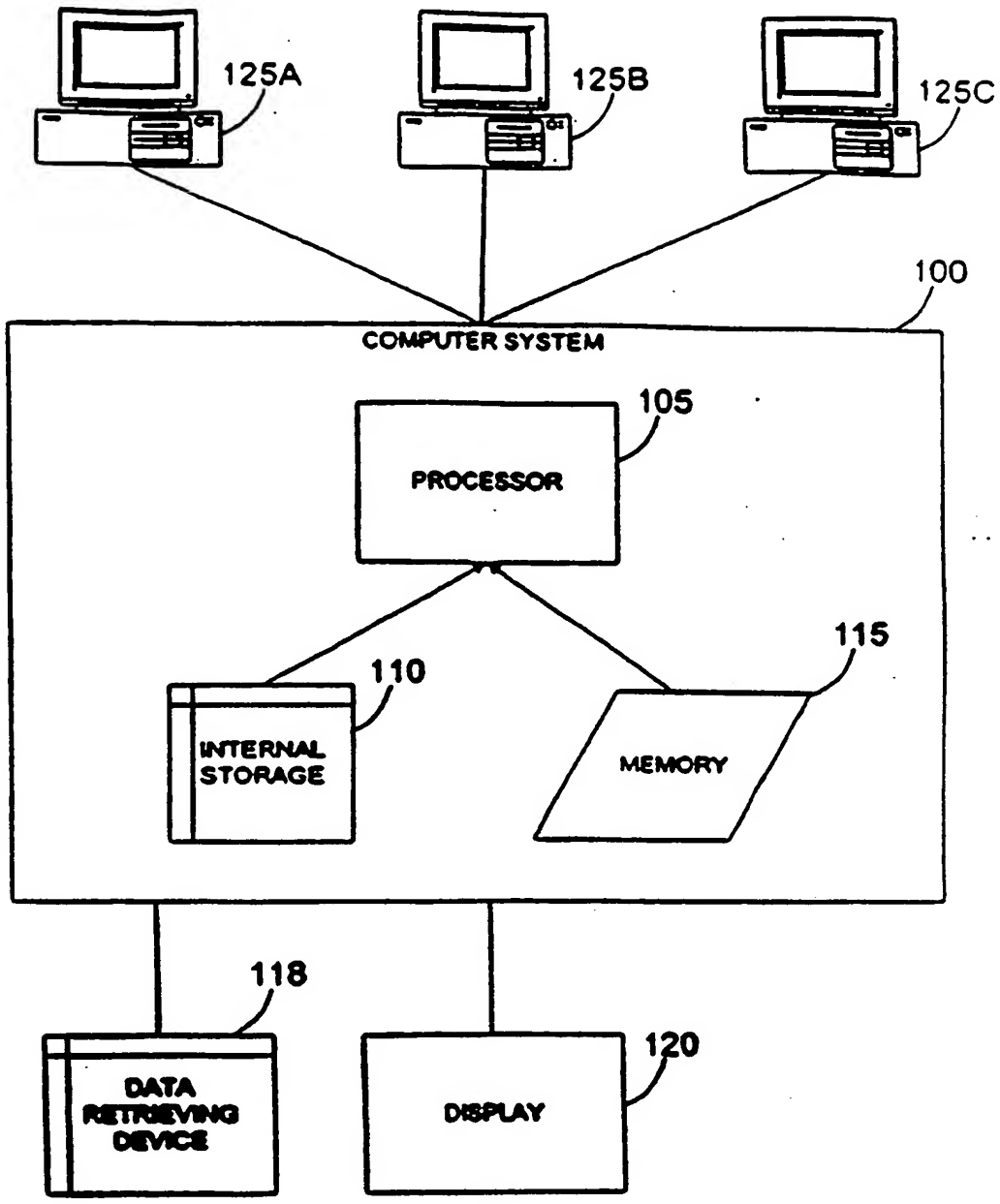


FIGURE 2

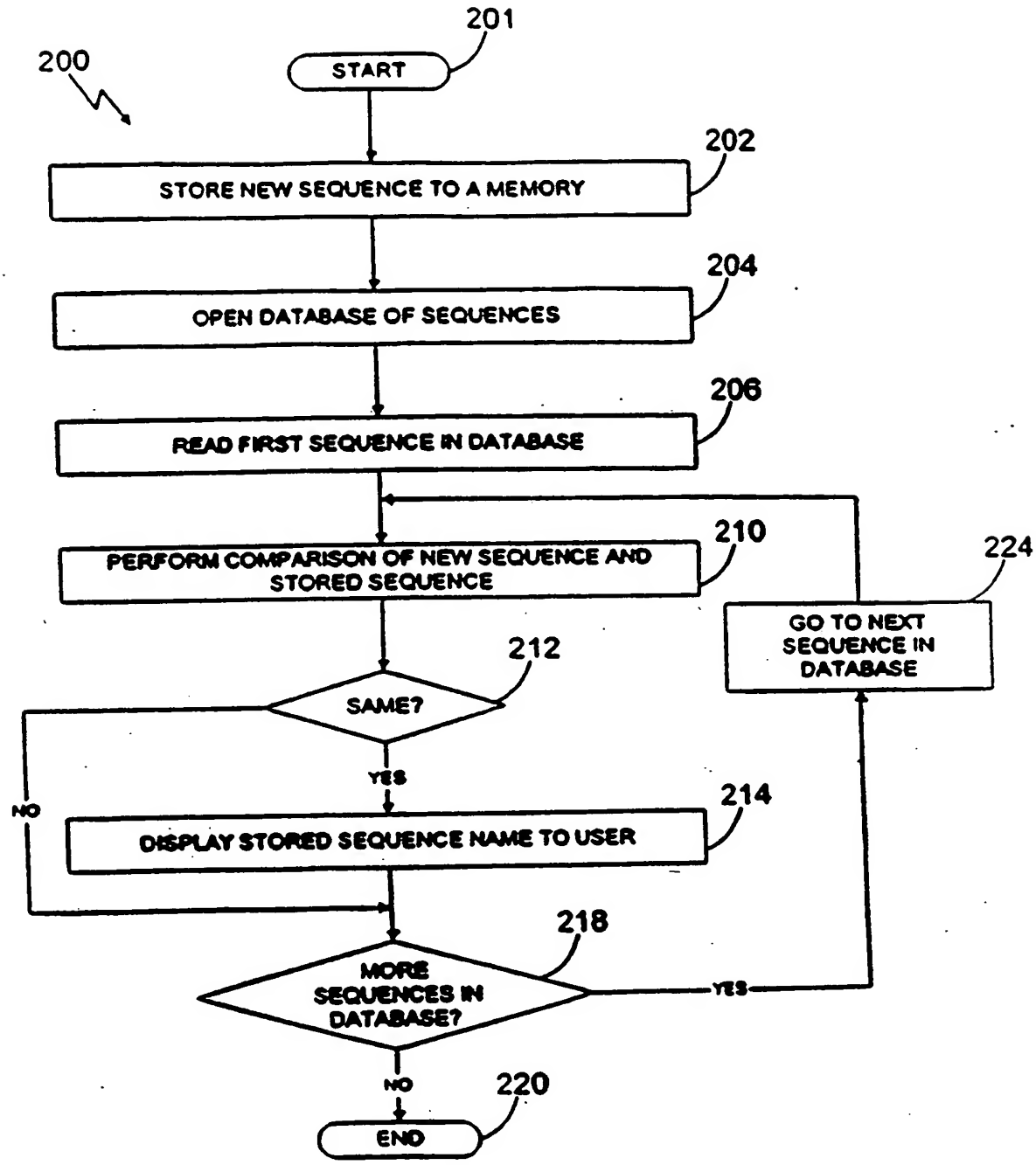

200
201
START
202
STORE NEW SEQUENCE TO A MEMORY
204
OPEN DATABASE OF SEQUENCES
206
READ FIRST SEQUENCE IN DATABASE
210
PERFORM COMPARISON OF NEW SEQUENCE AND STORED SEQUENCE
212
SAME?
YES
NO
214
DISPLAY STORED SEQUENCE NAME TO USER
218
MORE SEQUENCES IN DATABASE?
YES
NO
220
END
224
GO TO NEXT SEQUENCE IN DATABASE

FIGURE 3

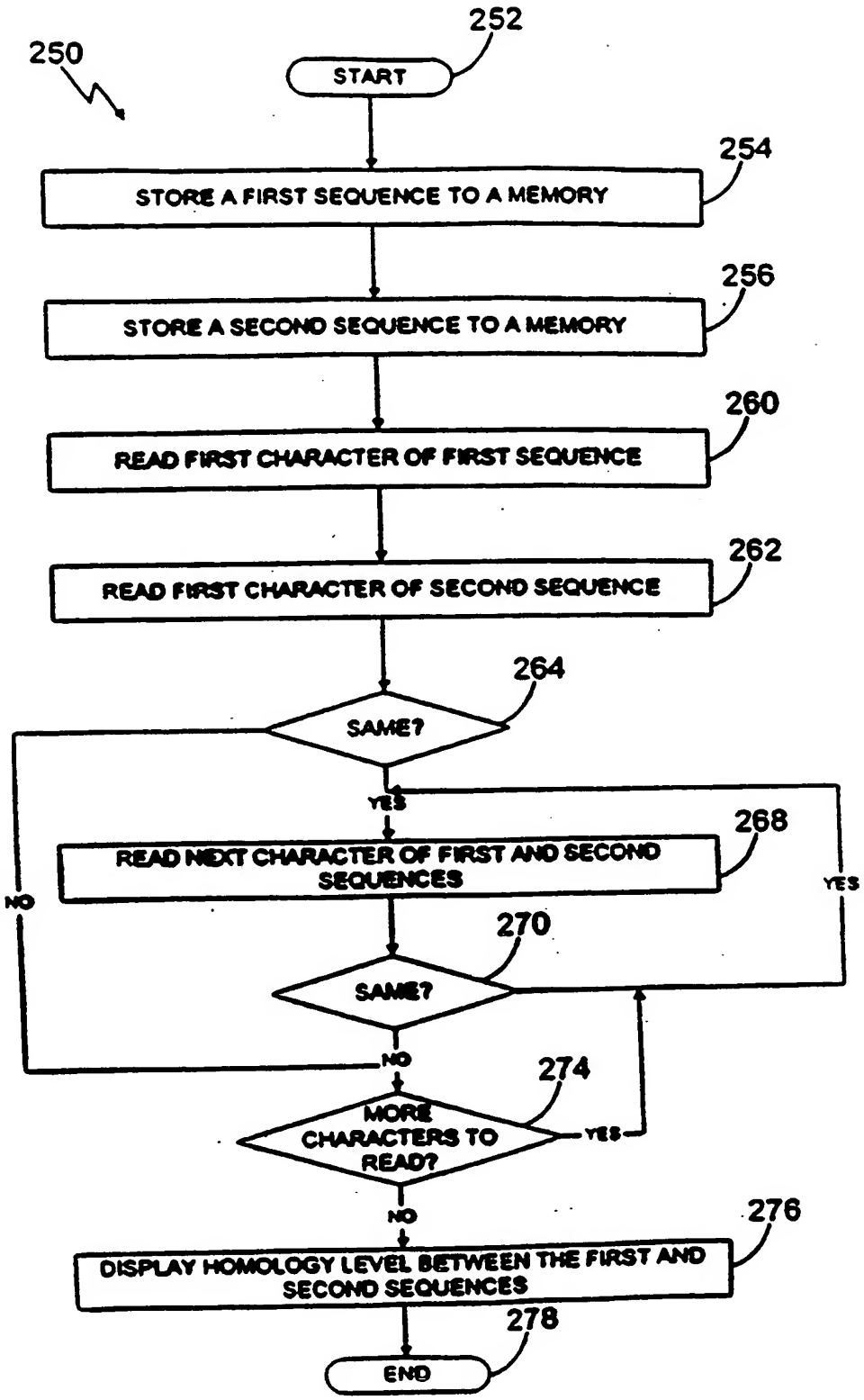

250
252
START
254
STORE A FIRST SEQUENCE TO A MEMORY
256
STORE A SECOND SEQUENCE TO A MEMORY
260
READ FIRST CHARACTER OF FIRST SEQUENCE
262
READ FIRST CHARACTER OF SECOND SEQUENCE
264
SAME?
YES
NO
268
READ NEXT CHARACTER OF FIRST AND SECOND SEQUENCES
YES
270
SAME?
NO
274
MORE CHARACTERS TO READ?
YES
NO
276
DISPLAY HOMOLOGY LEVEL BETWEEN THE FIRST AND SECOND SEQUENCES
278
END

FIGURE 4

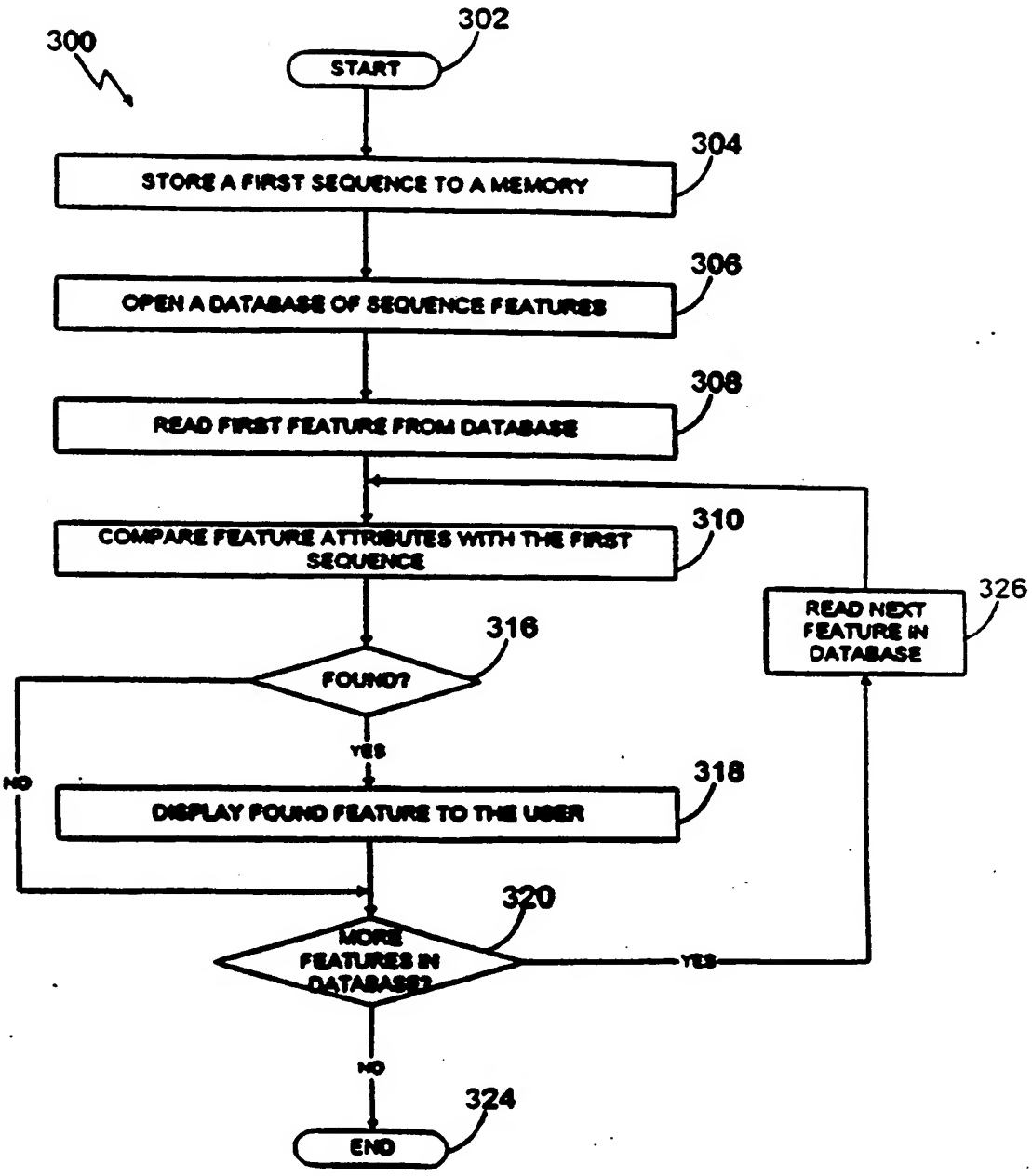

300
302
START
304
STORE A FIRST SEQUENCE TO A MEMORY
306
OPEN A DATABASE OF SEQUENCE FEATURES
308
READ FIRST FEATURE FROM DATABASE
310
COMPARE FEATURE ATTRIBUTES WITH THE FIRST SEQUENCE
316
FOUND?
YES
NO
318
DISPLAY FOUND FEATURE TO THE USER
320
MORE FEATURES IN DATABASE?
YES
NO
324
END
326
READ NEXT FEATURE IN DATABASE

FIGURE 5A

SEQ ID NO: in provisional	Relative Substrate Specificity	Relative Substrate Specificity Value	Characterization Activity Temp	Characterization Activity pH	Enzyme	Characterization Description	Characterization Substrate
101,102					Pectinase		
1, 2			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
103, 104					Pectate lyase		
105, 106	Cotton	4.8	40	9	Pectate lyase	Application Bioscouring	Cotton
107, 108	Cotton	1.5	40	9	Pectate lyase	Application Bioscouring	Cotton
107, 108			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
109, 110					Pectate lyase		
11, 12					Pectate lyase		
111, 112					Pectinase		
113, 114					Pectate lyase		
115, 116			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
117, 118	Cotton	3	40	9	Pectate lyase	Application Bioscouring	Cotton
119, 120			room temp	9	Pectate lyase		
121, 122	Cotton	7.8	50	9	Pectate lyase	Application bioscouring	Cotton
121, 122	Cotton	10.3	40	9	Pectate lyase	Application Bioscouring	Cotton
123, 124	Cotton	3.6	40	9	Pectate lyase	Application Bioscouring	Cotton
125, 126	Cotton	2.5	40	9	Pectate lyase	Application Bioscouring	Cotton
127, 128			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
127, 128			room temp	11	Pectate lyase	pga assay	Polygalacturonic acid
129, 130	Cotton	1.8	40	9	Pectate lyase	Application Bioscouring	Cotton
13, 14			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
15, 16					Pectate lyase		
17, 18				9	Pectate lyase	pga assay	Polygalacturonic acid
19, 20					Pectate lyase		
21, 22			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
23, 24					Pectate lyase		
25, 26			room temp	10	Pectate lyase	pga assay	Polygalacturonic acid
25, 26			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
27, 28					Pectate lyase		
29, 30					Pectinase		
3, 4					Pectinase		

FIGURE 5B

31, 32	Cotton	4.3	40	9	Pectate lyase	Application Bioscouring	Cotton
31, 32			room temp	8	Pectate lyase	pga assay	Polygalacturonic acid
33, 34			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
35, 36	Cotton	1.6	40	9	Pectate lyase	Application Bioscouring	Cotton
35, 36			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
37, 38	Cotton	11.2	50	9	Pectate lyase	Application Bioscouring	Cotton
39, 40			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
41, 42	Cotton	2	40	9	Pectate lyase	Application Bioscouring	Cotton
43, 44					Pectate lyase		
45, 46			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
47, 48			room temp	10	Pectate lyase	pga assay	Polygalacturonic acid
49, 50					Pectate lyase		
5, 6					Pectate lyase		
51, 52					Pectate lyase		
53, 54	Cotton	13.4	40	9	Pectate lyase	Application Bioscouring	Cotton
55, 56					Pectate lyase		
55, 56			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
57, 58				9	Pectate lyase	pga assay	Polygalacturonic acid
59, 60			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
61, 62	Cotton	12.5	40	9	Pectate lyase	Application Bioscouring	Cotton
61, 62			room temp	10	Pectate lyase	pga assay	Polygalacturonic acid
63, 64					Pectate lyase		
65, 66					Pectate lyase		
67, 68	Cotton	9.8	40	9	Pectate lyase	Application Bioscouring	Cotton
69, 70			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
7, 8			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
71, 72			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
73, 74	Cotton	0.8	40	9	Pectate lyase	Application Bioscouring	Cotton
73, 74			room temp	10	Pectate lyase	pga assay	Polygalacturonic acid
75, 76					Pectinase		
77, 78	Cotton	16.2	40	9	Pectate lyase	Application Bioscouring	Cotton
79, 80					Pectinase		
81, 82	Cotton	1.6	40	9	Pectate lyase	Application Bioscouring	Cotton
81, 82			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
83, 84	Cotton	3.2	40	9	Pectate lyase	Application Bioscouring	Cotton

FIGURE 5C

85, 86	Cotton	0.1	40	9	Pectate lyase	Application Bioscouring	Cotton
85, 86			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
87, 88	Cotton	9.4	40	9	Pectate lyase	Application Bioscouring	Cotton
89, 90					Pectinase		
9, 10			room temp	10	Pectate lyase	pga assay	Polygalacturonic acid
91, 92					Pectate lyase		
93, 94					Pectate lyase		
95, 96	Cotton	5.4	40	9	Pectate lyase	Application Bioscouring	Cotton
95, 96			room temp	9	Pectate lyase	pga assay	Polygalacturonic acid
97, 98					Pectate lyase		
99, 100	Cotton	16	50	9	Pectate lyase	Application Bioscouring	Cotton
99, 100	Cotton	12.2	40	9	Pectate lyase	Application Bioscouring	Cotton

FIGURE 6

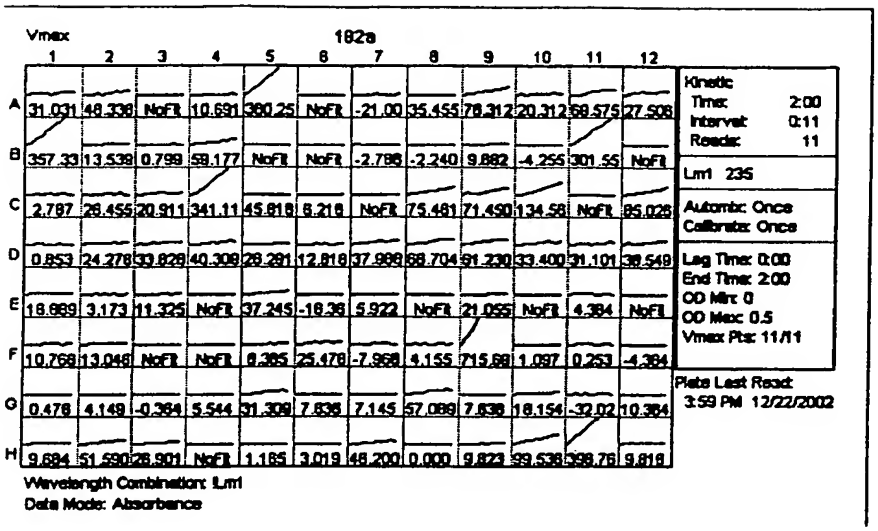
Pectate lyase GSSM™ upmutants

	Mutation											
Upmutant	A118H	A182V	T190L	A197G	S208K	T219M	T223E	S255R	S263K	N275Y	Y309W	S312V
A	x			x	x	x				x	x	x
B	x		x		x	x				x	x	x
C	x	x			x		x		x	x	x	
D	x	x	x		x			x	x	x	x	
E	x				x				x	x	x	
F	x	x			x		x	x		x	x	x
G	x		x		x		x	x	x	x	x	x
H	x	x	x	x	x		x			x	x	x
I	x			x	x		x		x		x	
J	x			x	x				x	x	x	x
K	x		x	x	x	x	x		x		x	x
L	x	x	x		x		x	x	x	x	x	
M	x	x		x	x		x		x	x	x	
N	x		x	x	x				x	x	x	x
O	x			x	x				x		x	x
P	x	x		x	x	x		x		x	x	
Q	x		x		x				x		x	x
R	x		x	x	x				x	x	x	
S	x		x	x		x	x	x	x	x	x	

FIGURE 7

Upmutant	Melting temperature (°C)	Specific Activity (SA) at 30°C	SA at 40°C	SA at 50°C	SA at 60°C	SA at 70°C
AA	60.6	370.3	582.1	848.2	ND	ND
BB	58.3	366.8	542.4	648.6	ND	ND
CC	57	331.1	439.7	713.6	ND	ND
DD	58	468.6	595.8	714.6	ND	ND
EE	60	102.2	202.5	378.1	ND	ND
FF	58.5	585.5	744.5	955.8	ND	ND
GG	57.2	323.8	590.4	909.3	ND	ND
HH	58.7	267.6	425.5	706.3	ND	ND
II	57.8	357.1	527.3	875.1	ND	ND
JJ	57.5	372.2	537.6	834.9	ND	ND
KK	58.9	444.1	678.9	859.4	ND	ND
LL	58.4	375.2	557.6	1007.1	ND	ND
A	71	ND	ND	311.1	483.3	777.7
B	70.4	ND	ND	317.0	432.4	628.0
C	72.5	ND	ND	377.6	468.6	849.1
D	73.25	ND	ND	323.8	352.2	926.4
E	71	ND	ND	340.4	557.6	641.7
F	71.75	ND	ND	389.3	550.8	438.3
G	73	ND	ND	297.4	545.9	790.4
H	72.25	ND	ND	356.1	480.3	980.2
I	70.4	ND	ND	363.9	701.4	666.2
J	72.8	ND	ND	241.6	622.2	694.6
K	71.5.	ND	ND	298.4	701.4	700.4
L	73	ND	ND	245.5	947.0	1003.7
M	73	ND	ND	304.2	547.8	309.1
N	73	ND	ND	685.8	1010.5	1284.5
O	71.3	ND	ND	268.0	517.5	330.7
P	72	ND	ND	398.2	542.9	689.7
Q	70.8	ND	ND	354.1	382.5	526.3
R	71.9	ND	ND	361.0	408.9	722.0
S	70.9	ND	ND	753.3	1186.6	579.1

FIGURE 8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182a
1 2 3 4 5 6 7 8 9 10 11 12
A 31.031 48.336 NoFit 10.691 380.25 NoFit -21.00 35.455 78.312 20.312 68.575 27.508
B 357.33 13.539 0.799 59.177 NoFit NoFit -2.786 -2.240 9.882 -4.255 301.55 NoFit
C 2.787 26.455 20.911 341.11 45.618 6.218 NoFit 75.481 71.450 134.58 NoFit 85.028
D 0.853 24.278 33.828 40.309 29.291 12.818 37.998 68.704 91.230 33.400 31.101 38.549
E 18.989 3.173 11.325 NoFit 37.245 -18.36 5.922 NoFit 21.055 NoFit 4.384 NoFit
F 10.768 13.048 NoFit NoFit 8.385 25.478 -7.968 4.155 715.68 1.097 0.253 -4.384
G 0.478 4.149 -0.364 5.544 31.309 7.836 7.145 57.089 7.638 18.154 -32.02 10.364
H 9.684 51.590 28.901 NoFit 1.185 3.019 46.200 0.000 9.823 99.536 398.76 9.818
Wavelength Combination: Lm1
Data Mode: Absorbance
Kinetic
Time: 2:00
Interval: 0:11
Reads: 11
Lm1 235
Automix: Once
Calibrate: Once
Lag Time: 0:00
End Time: 2:00
OD Min: 0
OD Max: 0.5
Vmax Pts: 11/11
Plate Last Read:
3:59 PM 12/22/2002